

Claim 244 (new): The isolated, synthetic or recombinant nucleic acid of claim 1, wherein the nucleic acid sequence has at least 98% sequence identity to SEQ ID NO: 77 or SEQ ID NO:131.

Claim 245 (new): The isolated, synthetic or recombinant nucleic acid of claim 1, wherein the nucleic acid sequence has at least 99% sequence identity to SEQ ID NO: 77 or SEQ ID NO:131.

### **REMARKS**

#### **Status of the Claims**

Claims 1, 9, 16, 24, 27, 31, 34-36, 40, 43, 45, 49, 51, 52, 54, 55, 61, 68, 81, 86, 87, 91, 93-95, 97-99, 101, 103, 106, 107, 111, 121, 123, 126, 136, 137, 141, 145, 146, 151, 153, 158, 164-166, 169, 170, 173, 174, 177-179, 190, 191, 194-197, 199, 201, 203-205, 208, 209, 212, 214-216, 218-221, 223-226, 229, 231-233 and 236-241 are pending.

Claims 34, 43, 45, 51, 54, 55, 61, 68, 81, 86, 87, 91, 93, 95, 97-99, 103, 106, 107, 111, 121, 123, 126, 136, 137, 141, 145, 146, 151, 153, 158, 164-166, 169, 170, 173, 174, 177-179, 190, 191, 194-197, 199, 201, 203-205, 208, 209, 212, 214-216, 218-221, 223-226, 229, 231-233, 236, 237 and 240-241 are withdrawn from further consideration.

Please cancel claim 16 without prejudice.

Claims 242-245 are added.

Accordingly, claims 1, 9, 24, 27, 31, 35, 36, 40, 49, 52, 94, 101, 165, 238, 239 and 242-245 are pending and under examination.

#### **Drawings – Objections**

Figure 8 is objected to because the Office copy is illegible, the labeling across the top and sides is not explained, and the abbreviations and symbols are not explained.

Applicant submits herewith one replacement sheet of a corrected drawing for the Examiner's consideration. Applicant respectfully submits that the replacement drawing provided herewith addresses the Examiner's aforementioned objection, and therefore the objection to Figure 8 may properly be withdrawn.

Specification – Objections

The specification is objected to for reasons set forth in detail on page 4 of the OA. Applicants respectfully submit that the amendments to the specification provided on page 2 of this paper address the Examiner's concerns. Therefore, the objection to the specification may be properly withdrawn.

Support of the Claim Amendments

The specification sets forth an extensive description of the invention in the amended claims. Accordingly, Applicants respectfully submit that no new matter is introduced by the instant amendment.

Claim Objections

Claims 1, 9, 16, 24, 27, 31, 35, 36, 40, 49, 52, 94, 101, 165, and 238-240 are objected to for reciting non-elected subject matter including the polynucleotide of SEQ ID NO:133 and SEQ ID NO:134 as well as enzymatic activities not encompassed by pectate lyase (EC 4.4.4.2) activity.

The instant amendment addresses this issue. Therefore, the claim objections may be properly withdrawn.

Claim Rejections – 35 USC § 112 2<sup>nd</sup> Paragraph

Claims 1, 9, 16, 24, 27, 31, 35, 36, 40, 49, 52, 94, 101, 165, and 238-240 are rejected under 35 U.S.C. §112, second paragraph for reasons set forth in detail on pages 4-7 of the OA.

The instant amendment addresses these issues. Therefore, the rejection of the claims under 35 U.S.C. §112, 2<sup>nd</sup> paragraph may be properly withdrawn.

Claim Rejections – 35 USC § 112 1<sup>st</sup> Paragraph

Enablement

Claims 1, 9, 16, 27, 31, 35, 36, 40, 49, 52, 94, 101, 165, and 238-240 are rejected under 35 U.S.C. §112, first paragraph because the specification, while being enabling for the nucleic acid molecule of SEQ ID NO: 77, as encoding the pectate lyase polypeptide of SEQ ID NO:78, allegedly does not reasonably provide enablement for any variant of SEQ ID NO:77.

The instant amendment addresses this issue. To address the Examiner's concern about the broad scope of the claims to a polynucleotide having at least 70% homology to SEQ ID NO: 77 or SEQ ID NO: 131, the claims are amended to encompass a nucleic acid having at least 90% homology to SEQ ID NO:77 or SEQ ID NO:131 and encoding a polypeptide having pectate lyase activity.

Therefore, the rejection of the claims under 35 U.S.C. §112, first paragraph-enablement may be properly withdrawn.

Written Description

Claims 1, 9, 16, 27, 31, 35, 36, 40, 49, 52, 94, 101, 165, and 238-240 are rejected under 35 U.S.C. §112, first paragraph for reasons set forth in detail on pages 11-13 of the OA. Applicants respectfully traverse.

On pages 11-12 through paragraph 2, the Examiner alleges that the subject matter is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. In order to address the Examiner's concern about the scope of the claims, and to expedite prosecution of the present application, the claims have been amended to encompass a nucleic acid having at least 90% homology to SEQ ID NO:77 or 131.

The Examiner acknowledges that the specification teaches the structure of two representative species of such nucleic acid molecules. Applicants respectfully aver that the claimed invention is sufficiently described in the specification so that one of ordinary skill in the art would be able to ascertain the scope of the claims with reasonable clarity and recognize that Applicants' were in possession of the claimed invention at the time of filing.

Applicants believe the instant amendment should address the Patent Office's concerns regarding the scope of the genus of nucleic acids of the invention.

On page 12, paragraph 3 of the OA, the Examiner alleges that Claim 1 introduces the limitations of polynucleotide variant of SEQ ID NO:77 or 131 encoding a pectate lyase comprising a heterologous signal sequence, a heterologous carbohydrate binding molecule, a heterologous pectin methyl esterase domain, a heterologous catalytic domain, a heterologous prepro domain, a heterologous enzyme or a combination thereof. The Examiner further alleges that the specification fails to describe said limitations. Applicants respectfully traverse the Examiner's rejection on this basis.

The specification describes, *inter alia*, pectate lyase signal sequences in detail on pages 118-123, including Table 2. See, for example, page 123, second paragraph, where the specification states:

"In one aspect, the invention provides a nucleic acid sequence encoding a signal sequence (SP), a CD, and/or prepro from one pectate lyase operably linked to a nucleic acid sequence of a different pectate lyase or, optionally, a signal sequence (SPs) and/or prepro domain from a non-pectate lyase protein may be desired."

Accordingly, the Applicants respectfully aver that this rejection to claim 1 for failing to comply with the written description requirement may be properly withdrawn.

On page 13, paragraph 2 of the OA, the Examiner rejects claim 9 as failing to comply with the written description requirement. The instant amendment addresses this issue, and therefore applicants respectfully aver that the rejection may be properly withdrawn.

Claim 239 is also rejected under §112, first paragraph as failing to comply with the written description requirement. The Examiner alleges that claim 239 introduces the limitation of the polynucleotide variant of SEQ ID NO:77 or 131 encoding a pectate lyase having thermostability. The Examiner further alleges that the specification fails to describe said limitation.

Applicants respectfully traverse the rejection of claim 239. The specification sufficiently describes the claimed invention on, for example, page 26, lines 14-16. Accordingly, the rejection of claim 239 under 35 U.S.C. §112, first paragraph may be properly withdrawn.

#### Claim Rejections – 35 USC § 102(b)

Claims 1, 9, 16, 24, 27, 31, 35, 36, 40, 49, 52, 94, 101, 165, and 238-240 are rejected as being anticipated by Brown et al, 2001 for reasons set forth on pages 13-14 of the OA.

The legal standard for anticipation under 35 U.S.C. §102 is one of strict identity. To anticipate a claim, a single prior source must contain each and every limitation of the claimed invention. In re Paulson, 30 F.3d 1475, 1478-79, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994)(citing In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990)). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). MPEP §2131; 8th ed., Rev. 6, September 2007.

The instant amendment addresses this issue. Brown *et al.* does not teach a nucleic acid that exhibits at least 90% or more sequence identity to SEQ ID NO:77 or 131. Thus, because Brown *et al.* is not a single prior source which contains each and every limitation of the claimed invention, the rejection under section 102 can be properly withdrawn.

#### Rejection Under 35 U.S.C. §103(a)

Claim 52 is rejected as being unpatentable over Brown et al, 2001 in view of Carthew et al, 2001.

The Office notes that Brown *et al.* is defective in that it does not teach a double stranded inhibitory RNA comprising a subsequence of their polynucleotide, and cited Carthew *et al.* to cure the defect.

However, as discussed above, after entry of the instant amendment, Brown *et al.* is further defective in that it does not teach the claimed nucleic acid sequences, and Carthew *et al.* does not

cure that defect. Accordingly, because the cited references do not teach the claimed nucleic acid sequences of this invention (as amended), the section 103(a) rejection can be properly withdrawn.

### **CONCLUSION**

In view of the foregoing amendment and remarks, Applicants respectfully submit that the Examiner can properly withdraw the rejection of pending claims under 35 U.S.C. §112, first and second paragraphs, 35 U.S.C. §102, and 35 U.S.C. §103. In view of the above, claims in this application after entry of the instant amendment are believed to be in condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejections of the claims and to pass this application to issue.

Applicants believe that no additional fees are necessitated by the present response and amendment. However, in the event any such fees are due, the Commissioner is hereby authorized to charge any such fees to Deposit Account No. 50-0661, referencing docket number D2000-1WUS. However, the Commissioner is not authorized to charge the cost of the issue fee to this deposit account. Please credit any overpayment to this account.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (858)526-0376.

Dated: September 25, 2008

Respectfully submitted,

By /JenniferRisser/  
Jennifer Risser

Registration No.: 60,059  
VERENIUM CORPORATION  
Intellectual Property Department  
PO BOX 910550  
San Diego, CA 92121-0550  
(858)526-0376  
jennifer.risser@verenium.com